



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2022-1055; Project Identifier AD-2022-00573-T]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Gulfstream Aerospace Corporation Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for certain Gulfstream Aerospace Corporation Model GVII-G500 and GVII-G600 airplanes. This proposed AD was prompted by reports of two landing incidents in which the alpha limiter engaged in the landing flare in unstable air, resulting in high rate of descent landings and damage to the airplanes. This proposed AD would require updating the flight control computer (FCC) software. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to [regulations.gov](https://www.regulations.gov). Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

### **Examining the AD Docket**

You may examine the AD docket at [regulations.gov](https://www.regulations.gov) by searching for and locating Docket No. FAA-2022-1055; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Myles Jalalian, Aerospace Engineer, Systems and Equipment Section, FAA, Atlanta ACO Branch, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5572; email: [9-ASO-ATLACO-ADs@faa.gov](mailto:9-ASO-ATLACO-ADs@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2022-1055; Project Identifier AD-2022-00573-T” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to [regulations.gov](https://www.regulations.gov), including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

## **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Myles Jalalian, Aerospace Engineer, Systems and Equipment Section, FAA, Atlanta ACO Branch, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5572; email: 9-ASO-ATLACO-ADs@faa.gov. Any commentary that the FAA receives that is not specifically designated as CBI will be placed in the public docket for this rulemaking.

## **Background**

The FAA has received a report indicating two landing incidents in which the alpha limiter engaged in the landing flare in unstable air, resulting in high rate of descent landings and damage to the airplanes. These incidents occurred on Model GVII-G500 airplanes on February 6, 2020 and April 4, 2022. In both events, the angle of attack (AOA) protection function (alpha limiter) of the FCC engaged and overrode the pilot pitch control inputs which the flight control law erroneously predicted would exceed the stall AOA. This resulted in a high rate of descent landing on the runway. Additionally, the pilots in both events had full aft-stick input when the aircraft contacted the runway, and the full-up pitch control did not arrest the high rate of descent landing.

Based on analyses and investigations performed by the FAA and Gulfstream, the root cause of the incidents was determined to be that the flight control laws did not

account for the types of control inputs experienced on the February 6, 2020 and April 4, 2022 flights. The FCC incorrectly determined the airplane was about to exceed the critical AOA, and therefore, the FCC limited the pilot's ability to input sufficient pitch control to prevent a high rate of descent landing. This condition, if not addressed, could limit pilot pitch authority during a critical phase of flight near the ground, and result in a high rate of descent landing with possible consequent loss of control of the airplane.

The FAA issued AD 2022-10-05, Amendment 39-22043 (87 FR 27494, May 9, 2022) (AD 2022-10-05), for all Gulfstream Aerospace Corporation Model GVII-G500 and GVII-G600 airplanes. AD 2022-10-05 retains certain airplane flight manual (AFM) revision requirements, and also adds and replaces certain AFM sections with more restrictive limitations and procedures. The agency issued AD 2022-10-05 to address inappropriate alpha limiter engagement during the landing flare, which can limit pilot pitch authority during a critical phase of flight near the ground, and result in a high rate of descent landing with possible consequent loss of control of the airplane on landing. The FAA considered the requirements in AD 2022-10-05 an interim action to address the unsafe condition identified after the two incidents. The FAA has since determined that an update to the FCC software is also needed to address the unsafe condition.

#### **Relationship Between this Proposed AD and AD 2022-10-05**

This NPRM would not supersede AD 2022-10-05. Rather, the FAA has determined that a stand-alone AD would be more appropriate to address the changes in the FCC software. This NPRM would require updating the FCC software.

Accomplishment of the proposed action would then terminate all of the requirements of AD 2022-10-05 for that airplane only.

#### **Explanation of the Compliance Time and the Applicability**

This proposed AD includes a compliance time that specifies a calendar date. In determining this compliance time, the FAA conducted a risk assessment, which indicated

that all corrective actions must be implemented in the affected fleet no later than April 30, 2023 in order to remain within acceptable risk guidelines.

Additionally, this proposed AD includes an applicability of Gulfstream Aerospace Corporation Model GVII-G500 and GVII-G600 airplanes with certain FCC software installed. Only airplanes with this affected FCC software need to apply the update. All in-service airplanes currently have this affected FCC software. The affected software part numbers are identified by the Gulfstream Aerospace Corporation part numbers.

### **FAA’s Determination**

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

### **Proposed AD Requirements in this NPRM**

This proposed AD would require updating the FCC software. This proposed AD would also terminate all of the requirements of AD 2022-10-05 for that airplane only.

### **Costs of Compliance**

The FAA estimates that this AD, if adopted as proposed, would affect 120 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

Estimated costs				
Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Software update	6 work-hours X \$85 per hour = \$510	\$0	\$510	\$61,200

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator.

Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

## PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

### § 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**Gulfstream Aerospace Corporation:** Docket No. FAA-2022-1055; Project Identifier AD-2022-00573-T.

#### (a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### (b) Affected ADs

This AD affects AD 2022-10-05, Amendment 39-22043 (87 FR 27494, May 9, 2022).

#### (c) Applicability

This AD applies to Gulfstream Aerospace Corporation Model GVII-G500 and GVII-G600 airplanes, certificated in any category, with flight control computer (FCC) software revisions installed as specified in figure 1 to paragraph (c) of this AD.

**Figure 1 to paragraph (c) – FCC Software Revision Installed**

Model–	Nomenclature–	Gulfstream Aerospace Corporation Part Number (P/N)–
GVII-G500 airplanes	FCC COM-MON Module A	72P2700001Z100-SW6.3
	FCC COM-MON Module B	72P2700001Z200-SW6.3
GVII-G600 airplanes	FCC COM-MON Module A	72P2700001Z100-SW8.1
	FCC COM-MON Module B	72P2700001Z200-SW6.3

Note 1 to paragraph (c): The FCC software label, which identifies the software revision installed, can be found on the face of the FCC module. The FCC modules are

installed within the left and right electronic equipment racks. The labels may be viewed by opening the rack doors and removing 4 screws per FCC (8 screws total per airplane) from the FCC cover.

**(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight controls.

**(e) Unsafe Condition**

This AD was prompted by reports of two landing incidents where the alpha limiter engaged in the landing flare in unstable air while on the approach and caused high rate of descent landings and damage to the airplane. The FAA is issuing this AD to address inappropriate alpha limiter engagement during the landing flare, which can limit pilot pitch authority during a critical phase of flight near the ground, and result in a high rate of descent landing with possible consequent loss of control of the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Software Update**

No later than April 30, 2023, update the FCC software in accordance with a method approved by the Manager, Atlanta ACO Branch, FAA.

**(h) Terminating Action for AD 2022-10-05**

Accomplishing the software update required by paragraph (g) of this AD on an airplane terminates all requirements of AD 2022-10-05, for that airplane only.

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Atlanta ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the

manager of the certification office, send it to the attention of the person identified in paragraph (j) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

**(j) Related Information**

For more information about this AD, contact Myles Jalalian, Aerospace Engineer, Systems and Equipment Section, FAA, Atlanta ACO Branch, 1701 Columbia Avenue, College Park, GA 30337; phone: 404-474-5572; email: 9-ASO-ATLACO-ADs@faa.gov.

Issued on August 15, 2022.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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